

Demographic Survey of Tucson's Sun Link Ridership

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The Modern Streetcar has an estimated 4000 ridership daily after one year of operation. This is the first ever survey conducted to create a socio-demographic profile of the Tucson Modern Street commuters. 637 commuters participated in the survey which was conducted over a 2-week period in November 2015. The study was done in collaboration with the Sun Link and Tucson Department of Transportation in fulfillment of the research requirements for graduate course DVP 640, Research Methods in Development Practice, under the supervision of Dr. Timothy Finan in the School of Geography and Development.



COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
SCHOOL OF GEOGRAPHY & DEVELOPMENT

Master's in
Development Practice



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PART I: Introduction, Methodology

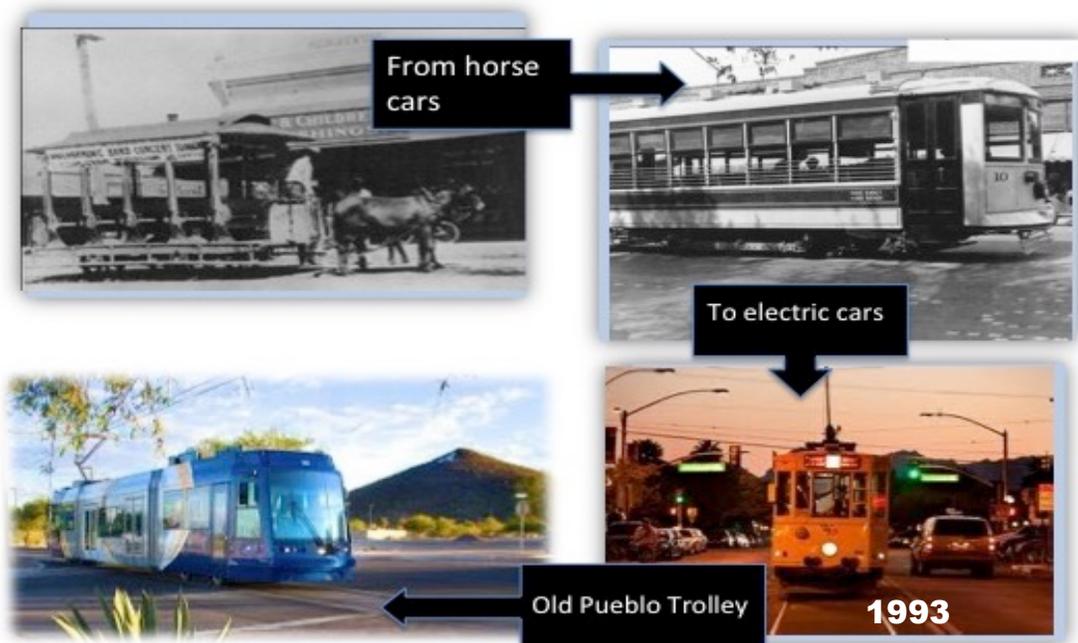
I.1 Introduction

The Master's in Development Practice (MDP) Program of the University of Arizona is a graduate program with the aim of training and producing highly professional development practitioners; equipped with the necessary tools to manage complex social problems across sectors and contribute in the reduction of grinding impacts of global poverty. Research is key to finding solutions. Thus, among its foundational courses is the "Research Methods in Development Practice" or DVP 640 which aims to equip students with the necessary tools and principles that will hone their data-gathering and analytical skills.

Under the professional supervision of Professor Dr. Timothy Finan, the research team conducted a study on the socio demographic profile of the Tucson Modern Streetcar ridership. The research team undertook the survey with the approval of Sunlink Management and the City of Tucson Department of Transportation.

I.2 Background on the Tucson Modern Streetcar Project

Streetcars are historically part of Tucson's way of life. The foundation of the University of Arizona in 1885 was especially instrumental in realizing Tucson's long-time attempts to finally establish the streetcar lines from downtown. "Horse and mule-drawn cars" were first introduced in 1897 while the "electric streetcars began operating in Tucson on June 1, 1906 as a mark of Tucson's "modernity" and ran until December 31, 1930 when buses replaced them. The Old Pueblo Trolley (OPT) was established as a non-profit organization primarily to protect and promote Tucson's mass transit history. In 1993, OPT inaugurated the "heritage streetcar" which ran over just a mile on the recovered streetcar track. The two OPT trolleys ran until October 2011 when it was suspended to give way to the construction of the Modern Streetcar.



With a construction budget of almost \$200 million, “was part of the \$2.1 billion Regional Transportation Plan, approved by Pima County voters in May 2006”. Due to its enormous budgetary requirements, with \$20 million coming from Tucson’s city budget, the deliberation on the construction of the modern Streetcar sparked a number of governance issues within and among various sectors in the city. Although top political powers, decision makers, and taxpayers debated on the viability of the project, overall, “the Tucson transit initiative actually originated in a grassroots movement and initially did not seem to have the united backing of the city's power structure”. Even Tucson’s Chamber of Commerce was among those initially opposed to the project. It was the “Citizens for a Sensible Transportation Solution (CFASTS), a grassroots-movement, who took the lead, with around 240 volunteers, and gathering around 18,000 signatures from Tucson voters who managed to sign its petitions to put the plan and the tax measures on the ballot amidst top level resistance.

FUNDING SOURCES FOR THE TUCSON STREETCAR:

Federal funding sources

- \$63 million – TIGER Grant awarded in February 2010
- \$6 million – New Starts “Exempt” project
- \$4 million – FTA Grant (HPP)

Local funding sources

- \$75 million – Regional Transportation Authority
- \$8.5 million – Public utilities (Water/Sewer)
- \$4.1 million – TIP/PAG/Grants
- \$2.9 million – The Gadsden Company

Other funding sources

- \$20 Million – City of Tucson Certificates of Participation/Grant Anticipation Notes
- \$13 million – Luis G. Gutierrez (Cushing) Bridge

Thus, the approval and the construction of the Tucson modern streetcar was a grassroots campaign success. In May 2006, the Regional Transportation Plan was adopted by a vote of almost 60% in favor. Construction began in April 2012 and continued through the summer of 2013. During its construction over 500 construction jobs were generated. The Tucson Streetcar Project team also ensured that the major stakeholders in the community were engaged in the project itself by creating a Community Liaison Group (CLG). The CLG was “an instrumental part of the extensive community outreach campaign utilized to ensure widespread public awareness of the alternative transit options under consideration”.

I.3 Review of Literature

In reviewing existing literature on the Tucson Modern Streetcar, the research team did not find any related or similar study that would help or serve as baseline for the proposed survey. It is, therefore, among objectives of this Survey to generate baseline data for future Modern Streetcar demographics studies and encourage interest to conduct more qualitative researches and analyses on its operation and services.

TUCSON STREETCAR MILESTONES



2010
Approval of the 63 Million
Grant



April 12, 2012

April 12, 2012
Groundbreaking



July 25, 2013

July 25, 2013
Completion of rail
installation



August 30, 2013

August 30, 2013
Arrival of the first
Streetcar



July 25, 2014
Grand Opening

I.4 Objective

The study seeks to gain knowledge on the socio-demographic profile of the estimated 4000 daily riders of the Tucson Modern Streetcar to serve as baseline data for understanding how Tucsonans and visitors are utilizing this new method of public transportation.

I.5 Methodology

The research team designed a quantitative survey consisting of 10 questions composed of three major categories:

1. *Basic socio demographics*
 - a. age
 - b. gender
2. *Social status of the rider*
 - a. income
 - b. occupational status
3. *Use of the streetcar*
 - a. frequency of use
 - b. days used
 - c. usual routes

The research team decided to do a paper and pen survey instead of an electronic and/or online method as it was deemed to be a more effective, accurate, and immediate way of data collection. Survey questionnaire was pre-tested with the research team surveying an initial 10 people to get feedback to refine the survey. Considering that they will be handed to the commuters and rides may be brief, speed in answering the question was the main consideration in formulating the survey form, which takes an average of sixty seconds to complete.

After the pre-test was completed, the research team met with Mr. Maximiliano Torres of the City of Tucson Department of Transportation to introduce the study and solicit official permission to conduct the survey on the streetcar itself. During the meeting, Mr. Torres also gave the general overview on the Streetcar Project having been involved with it as an Outreach Manager during its construction phase. Official clearance and approval from the Sunlink Management and the Tucson Department of Transportation was granted in October 2015.

The research team then plotted 3-4 hour survey shifts, based on the following operation schedule of the Streetcar services.

Schedule	MON-WED	THU-FRI	SATURDAY	SUNDAY
	7am-9am every 15 min	7am-9am every 15 min	8am-10am every 30 min	8am-10am every 30 min
	9am-6pm every 10 min	9am-6pm every 10 min	10am-Midnight every 15 min	10am-6pm every 20 min
	6pm-10pm* every 15 min	6pm-Midnight every 15 min Midnight-2am* every 30 min	Midnight-2am* every 30 min	6pm-8pm* every 30 min
*start time of the last trip of the day				

Participation in the survey was purely opportunistic and voluntary. Overall, there was favorable and high turnout of interest among the riders to participate in the survey. Generally, those who refused to participate were the senior (60 years or older) riders.

Data were collated and encoded immediately after the conduct of the surveys to validate and review any potential invalid forms. The Researchers also debriefed after the first day of the data collection to share initial findings and experience that could help in the conduct of the succeeding activities.

I.6 Timeline & Work plan

The research team was guided by the following schedule and work plan.

ACTIVITIES WEEK	OCT				NOV				DEC	
	1	2	3	4	1	2	3	4	1	2
PREPARATIONS										
1. Approval of Topic/Research question										
2. Discuss refinements, methodology, timelines										
3. Review Related Literature										
4. Draft 2-page scope of work										
5. Draft survey questionnaire										
6. Visit Sunlink Management to present proposal										
7. Observe Streetcar operation										
8. Identify Experts/Other Resource persons										
9. Revision of Questionnaire/Scope of Work as maybe necessary										
10. Submission of final scope of work to Dr. Finan										
11. Pre-test Questionnaire										
RESEARCH PROPER										
1. Condit Survey (within 7 days/varying hours)										
2. Meet for debriefing on the process										
3. Encode/Process collected data										
4. Discussion/Data analysis										
5. Draft Report										
6. Presentation of draft to Dr. Finan for comments/Revision										
7. Final Submission / Class Presentation										

II.1 Results

362 completed surveys were collected on Weekdays (Monday through Friday) and 275 completed surveys were collected on Weekend days (Saturday and Sunday) for a total of 637 completed surveys collected altogether during our two week survey period. Less than 4% of approached participants, that is to say streetcar riders, declined participation in the survey allowing us to be confident in the analysis of our collected data sample as a fair depiction of actual streetcar demographics, regardless of scale.

Figure 2.1 below is the final compilation of the survey results. The first column is dedicated to the responses collected on weekdays, the middle column weekends, and the third column for the combination of the previous two to determine the total breakdown of overall demographics. Each following row is dedicated to the results of one question on the survey, for example, row 2, “age”, corresponds with the first question on the survey: “Please select your age group”. The number following the multiple-choice option that was provided to respondents is the raw number of individuals who selected that multiple-choice option on their survey. Some of the responses also have a corresponding percentage, referring to the percentage of respondents who selected that answer. Only sections that had significant variation have the percentages included in this paper.

Figure 2.1

Weekday: 362 surveys	Weekend: 275 surveys	Combined: 637 surveys
Age 0 - 13 = 2 14 - 18 = 46 19 - 25 = 202 26 - 35 = 40 35 - 45 = 14 46 - 60 = 29 60+ = 26 NA = 3	Age 0 - 13 = 20 14 - 18 = 30 19 - 25 = 88 26 - 35 = 31 35 - 45 = 30 46 - 60 = 44 60+ = 30 NA = 2	Age 0 - 13 = 22 ---- 3.5% 14 - 18 = 78 ----- 12.2% 19 - 25 = 290 ---- 46% 26 - 35 = 71 ---- 11% 35 - 45 = 44 ---- 7% 46 - 60 = 73 ---- 11.5% 60+ = 56 --- 8.79% NA = 5 ---- .01%
Gender Male = 139 Female = 216 Other = 1 NA = 6	Gender Male = 120 Female = 155 Other = 0 NA = 0	Gender Male = 259 ---- 40.7% Female = 371 ----- 58.2% Other = 1 ---- .02% NA = 6 --- .94%
Race African American = 15 Asian = 27 Latin American/Mexican = 71 NA = 13 Other = 24 White = 212	Race African American = 12 Asian = 18 Latin American/Mexican = 64 NA = 2 Other = 14 White = 165	Race African American = 27 --- 4.2% Asian = 45 ----- 7.1% Latin American/Mexican = 135- ---- 21.2% NA = 15 --- 2.4% Other = 38 --- 6.0 % White = 377 --- 59.2%
Income 0 - 500 = 155 501 - 1,000 = 50 1,001 - 3,000 = 52 3,001 - 5,000 = 22 5,001 - 9,000 = 12 9,000+ = 10 NA = 61	Income 0 - 500 = 88 501 - 1,000 = 34 1,001 - 3,000 = 50 3,001 - 5,000 = 28 5,001 - 9,000 = 30 9,000+ = 14 NA = 31	Income 0 - 500 = 243--- 38.1% 501 - 1,000 = 84 --- 13.2% 1,001 - 3,000 = 102 -- 16.0% 3,001 - 5,000 = 50 -- 7.8 % 5,001 - 9,000 = 42 --- 6.6% 9,000+ = 24 -- 3.8% NA = 92 --- 14.4%
Occupation Student = 259 Working Professional = 59 Unemployed = 9 Other = 25 NA = 10	Occupation Student = 130 Working Professional = 89 Unemployed = 10 Other = 42 NA = 5	Occupation Student = 389 -- 61.1% Working Professional = 148 -- 23.2% Unemployed = 19 --- 3.0% Other = 67--- 10.5% NA = 15 --- 2.4%
Tucson Resident Yes = 240 No = 115 NA = 7	Tucson Resident Yes = 183 No = 90 NA = 2	Tucson Resident Yes = 423 --- 66.4% No = 205 --- 32.2% NA = 9 --- 1.4%
Area of Tucson Reside North = 24 East = 25	Area of Tucson Reside North = 31 East = 45	Area of Tucson Reside North = 55 --- 8.6% East = 70--- 11.1%

South = 23 West = 39 Midtown = 21 Downtown = 104 University = 93 I do not live in Tucson = 17 NA = 16	South = 8 West = 34 Midtown = 17 Downtown = 21 University = 46 I do not live in Tucson = 69 NA = 4	South = 31 --- 4.9% West = 73 --- 11.5% Midtown = 38 -- 6.0% Downtown = 125 --- 19.6% University = 139 --- 21.8% I do not live in Tucson = 86 --- 13.5% NA = 20 --- 3.1%
How often use the streetcar Few times per year = 33 – 9% Once a month = 9 – 3% Once a week = 26 – 7% 3x or more per week = 63 – 17% 5x or more per week = 200 – 55% Never = 10 – 3% NA = 21 – 6%	How often use the streetcar Few times per year = 99 – 36% Once a month = 21 – 8% Once a week = 17 – 6% 3x or more per week = 25 – 9% 5x or more per week = 45 – 17% Never = 56 – 20% NA = 12 – 4%	How often use the streetcar Few times per year = 132 -- 20.7% Once a month = 30 --- 4.7% Once a week = 43 --- 6.8% 3x or more per week = 88 -- 13.8% 5x or more per week = 245 -- 38.5% Never = 66 --- 10.4% NA = 33 --- 5.2%
When do you use the streetcar? Weekdays = 143 – 40% Weekends = 9 – 3% Just to get to special events = 12 – 3% All of the above = 161 – 44% Never = 9 – 2% NA = 28 – 8%	When do you use the streetcar? Weekdays = 12 – 4% Weekends = 62 – 22% Just to get to special events = 68 – 25% All of the above = 87 – 32% Never = 36 – 13% NA = 10 – 4%	When do you use the streetcar? Weekdays = 155 --- 24.3% Weekends = 71 --- 11.1% Just to get to special events = 80 -- 12.6% All of the above = 248 --- 38.9% Never = 45 --- 7.1% NA = 38 --- 6.0%

II.2 Trends and Analysis

The choice to initially keep the data pools for weekday versus weekend days separate was motivated by a desire to see if there is any significant demographic shift present based on these variables alone. As you can see by the data presented in Figure 2.1 above, there is insignificant variation in the demographics present on a weekday versus a weekend day in all categories except for perhaps the two most obvious; how often an individual uses the streetcar and when. On a weekday 40% of riders report that they primarily use the streetcar, not surprisingly, on weekdays, whereas only 4% of riders surveyed on a weekend report the same. Interestingly, both on a weekend and weekday the majority of riders report to using the streetcar on weekends, weekdays, and to get to special events, with 44% and 32% respectively. This suggests, and is supported by the rest of the collected data, that Sun Link riders on average utilize the streetcar services on a fairly regular basis.

This is particularly prevalent for the weekday commuter demographic, as 55% of respondents surveyed on a weekday indicate that they use the streetcar five or more times per week, and an additional 17% three or more times per week, indicating that a total of 72% of weekday riders

are using the streetcar, primarily to commute to the University of Arizona, multiple times a week on a regular basis.

From this data, it is also possible to extrapolate that the average rider on the streetcar is 19-25 years old, white, a student, making less than \$500 per month, and utilizes the streetcar several times a week.

The most troubling finding is that 38.1% of riders have a monthly income of less than \$500, meaning that at most making \$6,000 in a year, roughly *half* of the federal annual income poverty guideline of \$11,770 for a single person household. Granted, 87.5% of respondents who selected their income as within the \$0 – 500 range identified their occupation as “student”. For students at the University level, “income”, is a more nebulous concept as according to the U.S. Department of Education, 85% of full-time/degree-seeking undergraduate students at 4-year institutions receive some amount of financial aid. Even conservative estimates would then assume that at least half of the 243 respondents who reported to have an income of less than \$500 are receiving financial assistance outside of their reported estimated monthly income. Other than the factor of occupation, as 87.5% of respondents in this category identified as students, all other demographic data is consistent with the trends in the larger sampling pool, indicating that the prominent difference in the demography of those making less than \$500 per month is occupation. It is also important to note that human error could also be a significant factor, specifically regarding our data on income, as it is possible that riders under or over reported or simply inaccurately estimated their monthly income.

Figures 2.2 – 2.10 below are visual representations of the combined results for both weekends and weekdays, including all 637 collected survey’s data to illustrate overall demographics and trends.

Figure 2.2

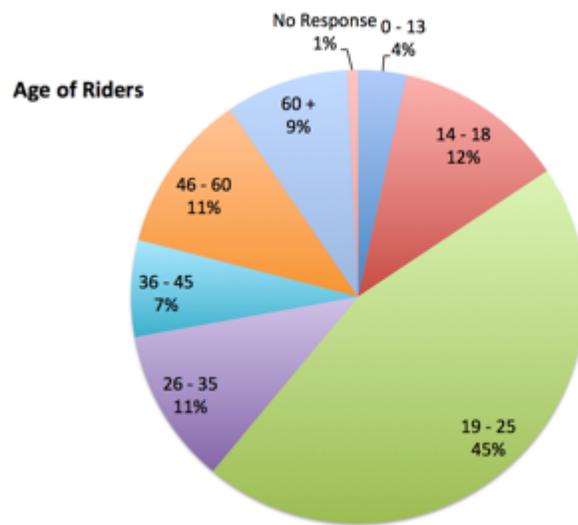


Figure 2.3

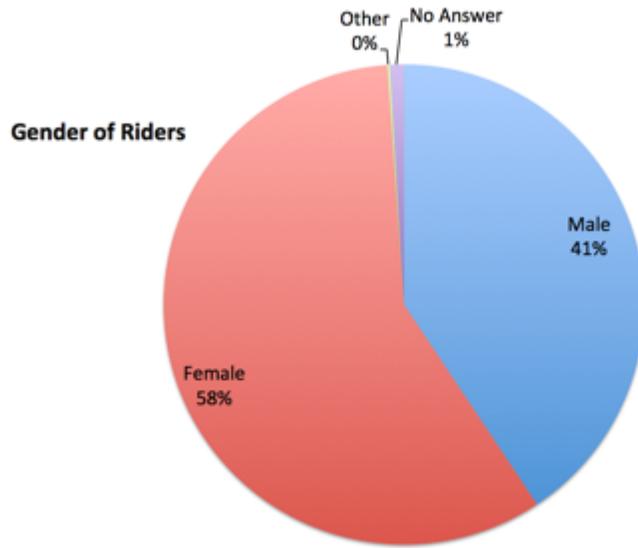


Figure 2.4

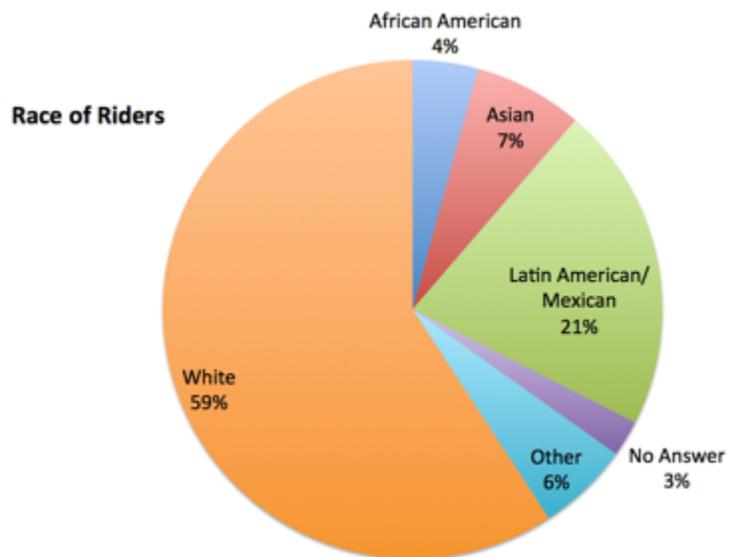


Figure 2.5

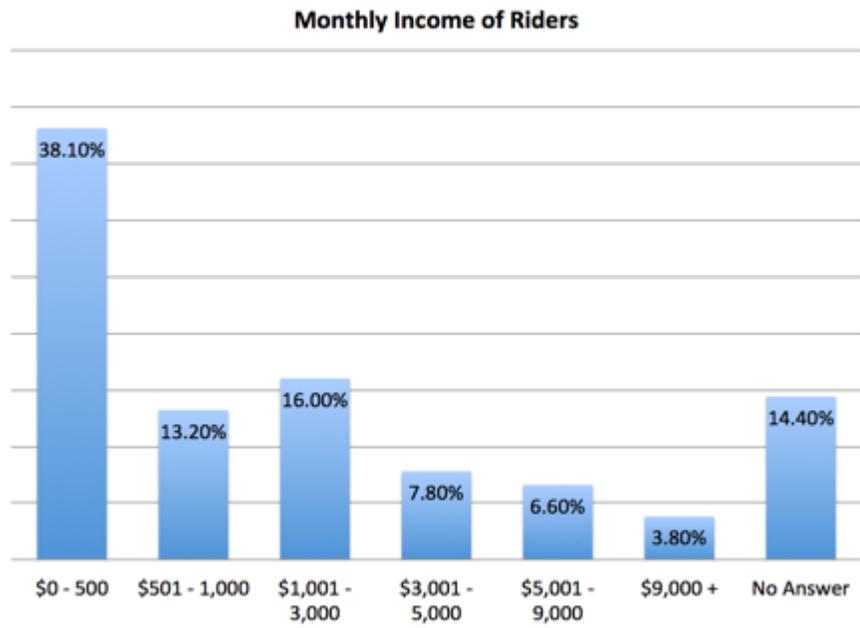


Figure 2.6

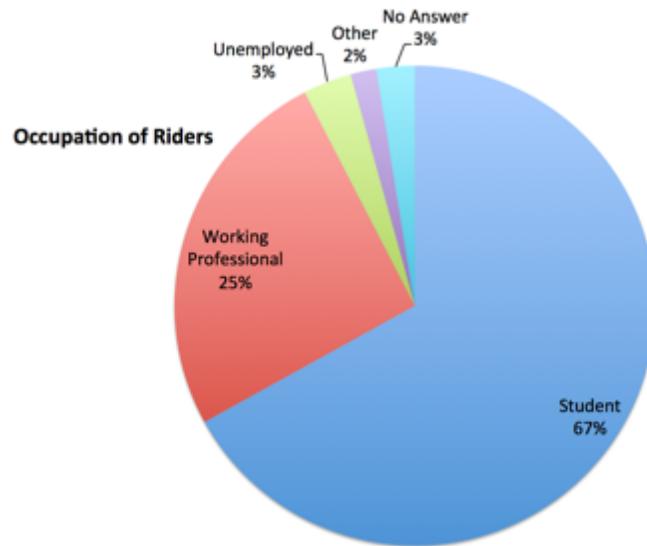


Figure 2.7

Percentage of Riders who consider themselves Tucson Residents

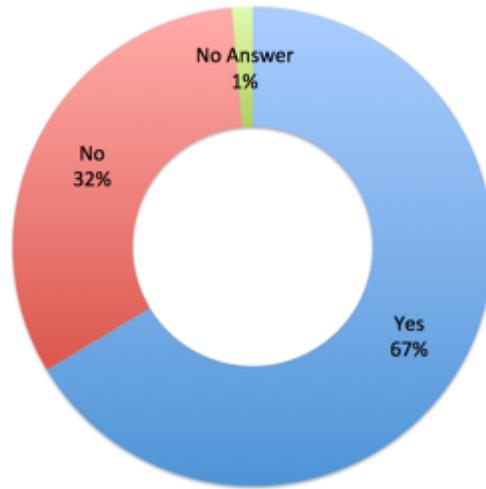


Figure 2.8

Area of Tucson Riders Reside

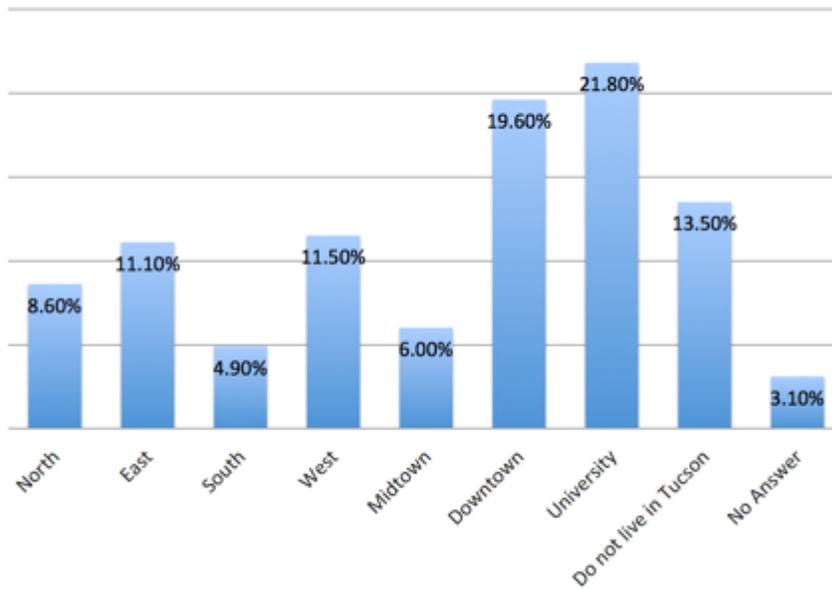


Figure 2.9

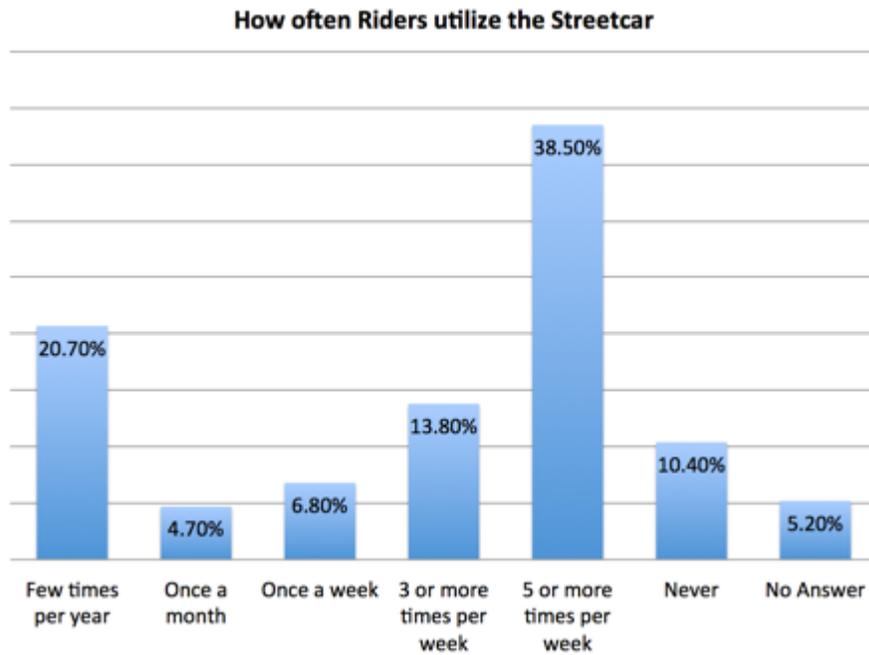
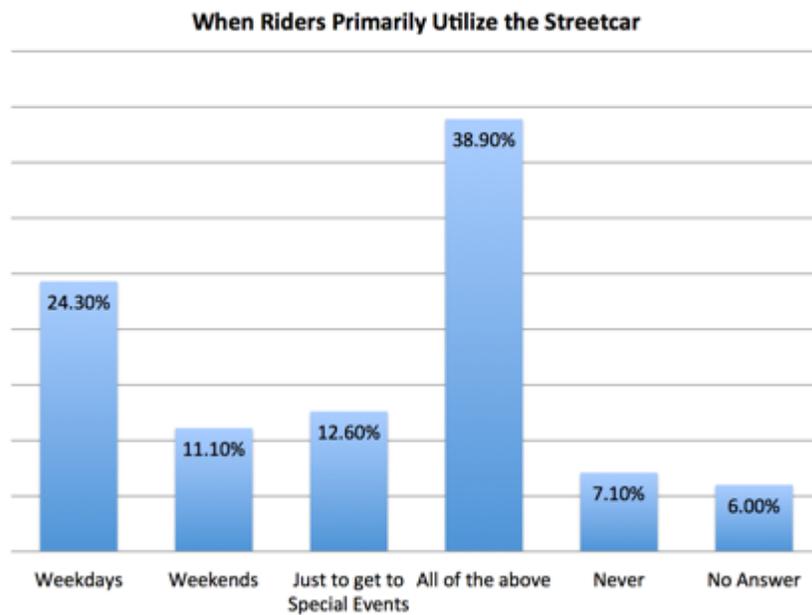


Figure 2.10



PART III: Conclusions

III.1 Conclusions of Study

Throughout the research and data collection process, the researchers have concluded that the Sun Link streetcar project has proven to be a success to the city of Tucson. Streetcar ridership is higher than originally expected by city officials, and the project is on track to recover the costs of the construction process. As expected, the data shows that people using the streetcar on a regular basis are generally University of Arizona students, who utilize the streetcar for commuting to classes, attending events around the Tucson metro area, and enjoying the vibrant city center. Many survey respondents indicated that the Sun Link streetcar has replaced their usual modes of transportation, namely driving individual cars, because of high costs of parking in and around the University as well as ease of commute. This is a positive finding for the city, as it confirms the idea that people will regularly use public transportation if given the opportunity, helping to ease traffic congestion and parking issues around the metro area. The Sun Link streetcar also provides a convenient mode of transportation for visitors to the Tucson area, offering a comfortable alternative to navigating the city while easily helping tourists enjoy the best of the downtown area. Overall, the decision to implement the streetcar project in Tucson has turned out to be a practical and exciting alternative to downtown transportation, and many survey respondents have echoed this success in their responses. The goal of this research proposal was to provide a clearer picture of the demographics of who is utilizing the streetcar on a regular basis, in an effort to provide information to the city of Tucson in considerations of project expansion in the coming years. The researchers feel that this goal has been met, and the demographic information will prove valuable in consideration of city transportation projects in the future.

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TUCSON'S MODERN STREETCAR COMMUTERS' DEMOGRAPHY SURVEY



THIS SURVEY IS BEING CONDUCTED TO CREATE A BASIC DEMOGRAPHIC SKETCH OF THE TUCSON'S MODERN STREETCAR USERS FOR AID OF SUNLINK'S SERVICES & FUTURE EXPANSION. PARTICIPATION IS **COMPLETELY VOLUNTARY**. ALL INFORMATION COLLECTED IS ANONYMOUS AND WILL BE USED FOR THE PURPOSES OF THIS STUDY BY MASTER'S IN DEVELOPMENT PRACTICE CANDIDATES AT THE UNIVERSITY OF ARIZONA SCHOOL OF GEOGRAPHY & DEVELOPMENT FOR SUNLINK STREETCAR.

Please select your age group.

- 0 – 13 years old
- 14 – 18 years old
- 19 – 25 years old
- 26 – 35 years old
- 36 – 45 years old
- 46 – 60 years old
- 61 years old or older
- Choose not to answer

Please select your gender.

- Male
- Female
- Other
- Choose not to answer

Please select your race.

- White/Caucasian
- Latin American/Mexican
- African American
- Asian/Pacific Islander
- Other
- Choose not to answer

Please choose your estimated MONTHLY income.

- \$0 - \$500
- \$501 - \$1,000
- \$1,001 - \$3,000
- \$3,001 - \$5,000
- \$5,001 - \$9,000
- \$9,000+
- Choose not to answer

Please select your occupation.

- Student
- Working Professional
- Unemployed
- Other
- Choose not to answer

Do you consider yourself a resident of Tucson, Arizona?

- Yes
- No
- Choose not to answer

Please select which area of Tucson you live in.

- North
- East
- South
- West
- University
- Midtown
- Downtown
- I do not live in Tucson, Arizona
- Choose not to answer

How often do you use the streetcar?

- Few times per year
- Once a month
- Once a week
- 3 or more times a week
- 5 or more times per week
- Never
- Choose not to answer

When do you use the streetcar?

- Weekdays
- Weekends
- Just to get to special events
- All of the above
- Never
- Choose not to answer

Why do you use the streetcar? What do you use the streetcar for?

THANK YOU FOR YOUR
PARTICIPATION. PLEASE DIRECT QUESTIONS AND
CONCERNS TO chein@email.arizona.edu